

REMARKS

By the present amendment, claims 1 to 8 are pending in the application.

Claim 1 is the only independent claim.

Restriction Requirement

Applicants hereby affirm the election of the claims of Group I, i.e., claims 1 to 8, for further prosecution in this application.

By the present amendment, non-elected method claims 9 to 14 have been canceled without prejudice to the filing of a divisional patent application directed to the subject matter of non-elected method claims 9 to 14.

Statement Of Substance Of Interview

The undersigned attorney agrees with the Examiner-Initiated Interview Summary attached to the Office Action mailed May 28, 2008.

On October 2, 2007, the Examiner telephoned the undersigned attorney and required restriction between the claims of Group I, claims 1 to 8 (product claims), and the claims of Group II, claims 9 to 14 (method claims).

On October 11, 2007, the undersigned attorney elected by telephone call to the Examiner the claims of Group I, claims 1 to 8, for further prosecution in this application. The election was made without traverse.

There were no exhibits shown or demonstration conducted. There were no rejections discussed. The claims discussed were claims 1 to 14. There was no prior art discussed. The only agreement reached was the telephone election of the claims of Group I, i.e., claims 1 to 8. There were no other pertinent matters discussed.

Support For Claim Amendments

Claim 1

Support for spot weldability may be found in the specification, e.g., at page 22, lines 24 to 25 and page 28, lines 8 to 9.

Support for the upper limit of Mn being 2.49% may be found, e.g., in Table I, page 30, Example J-1 and Table 5, page 41, Example J-1.

Support for maximum yield ratio of less than 0.90 may be found in the specification, e.g., at page 13, line 19.

TS x (E1)^½ has been amended in response to the claim objection.

Claim 3

Support for the yield ratio of the hot-rolled steel sheet of claim 3 being 0.72 to less than 0.90 may be found in the specification, e.g., at page 19, lines 30 to 33.

Claim Objection

Claim 1 was objected to on the grounds that “TS x E1” should read --TS x (EL)^½--.

In response to this objection, claim 1 has been amended by the present amendment.

In view of the present amendment, it is respectfully requested that the objection to claim 1 be withdrawn.

§103

Claims 1 to 4 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japan No. 2001-226741 to Kawabe.

Claims 5 to 8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Japan No. 2001-226741 to Kawabe in view of Marder, Vol. 20 of ASM Handbook (1997).

These rejections, as applied to the amended claims, are respectfully traversed.

Patentability

Si content of the present invention

The Si content of 0.30 - 0.80% of the present invention is first realized by the co-presence of the predetermined amount of Mn and the amounts of Ti, Nb, Mo and B for achieving the predetermined yield ratio, ductility and weldability.

On the other hand, Japan No. 2001-226741 (the “‘741” patent) claims an Si content of 0.05 - 0.50%. However, the preferable range of the Si content in the ‘741 patent is 0.10% to less than 0.30%, and the Si content in Table 1 is 0.11 - 0.22%, and never discloses the Si content of 0.30 - 0.80% according to the present invention. Therefore, spot weldability of the ‘741 patent is inferior to that of the present invention.

Further, the ‘741 patent contains Mn, Ti and Nb as an indispensable elements, and Mo and B as an optional elements which do not show in Examples. Therefore, spot weldability of the ‘741 parent is inferior. In addition, the ‘741 patent does not address measuring spot weldability. Therefore, it is impossible to conceive the steel sheet satisfying high yield ratio, high elongation and superior spot weldability according to the present invention from the teachings of the ‘741 patent.

Mn content of the present invention

The Mn content of 1.8 - 2.49% of the present invention achieves high yield ratio, good ductility and spot weldability with composite addition with Si, Ti, Nb, Mo and B.

On the other hand, the Mn content defined in the ‘741 patent is 2.5 - 3.5%, preferably 3.10 - 3.4%, and Table 1, 3.11 - 3.34%, (comparative example is 2.05%), which is quite a different amount of the Mn content as compared to the present invention.

As explained above, the present invention defines the Si content of 0.30 - 0.80% and the Mn content of 1.8 - 2.49%. On the other hand, the ‘741 patent contains Si content of 0.11 - 0.22%, and Mn content of 3.1 - 3.34% as a preferable range. Therefore, the

‘741 patent is directed to a different kind of the steel sheet as compared to the present invention.

Product process

Regarding a hot rolling process in the ‘741 patent, the hot rolled steel sheet is coiled at a temperature range of 350 - 550°C, preferably 400 - 500°C. On the other hand, the coiling temperature defined in the present invention is less than 700°C, preferably at 650°C or less, more preferably at 600°C (See: Example 1). This means that the ‘741 patent cannot obtain a grain diameter of less than 5 µm and the desired microstructure also cannot be obtained by the ‘741 patent as compared to the present invention.

Annealing process after cold rolling

The cooling rate of the present invention in the range of 500 - 600°C after heating is more than 5°C/sec, and 30°C/sec in Example 5. On the other hand, the ‘741 patent defines the cooling rate after annealing as 40 - 100°C/sec for obtaining high strength of more than 780 MPa. On the other hand, the present invention obtains high strength of more than 780 MPa with different processing conditions. Therefore, the steel compositions and the production process defined in the ‘741 patent cannot obtain the desired result according to the present invention.

With respect to independent claim 1, the Marder reference does not cure the defects in the disclosure of the ‘741 patent.

It is therefore submitted that independent claim 1, and all claims dependent thereon, are patentable over Japan No. 2001-226741 alone or in view of the Marder reference.

CONCLUSION

It is submitted that in view of the present amendment and foregoing remarks, the application is now in condition for allowance. It is therefore respectfully requested that the application, as amended, be allowed and passed for issue.

Respectfully submitted,

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